3 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION STRATEGIES

3.0 Introduction

This chapter addresses potential impacts on environmental resources, treating each resource in a separate subsection. CEQA encourages state agencies to prepare joint CEQA-NEPA documents and also to rely on EISs prepared for compliance with NEPA to satisfy CEQA requirements where possible and appropriate. The Authority and the FRA have used their best judgment in preparing this combined Program EIR/EIS to satisfy both CEQA and NEPA requirements, and, as a result, it contains more information than is mandated by either the federal or state statutory and regulatory requirements. Including this information is appropriate because of the complex and unusual nature of, and the technical issues involved in, the project, the proposed HST system. In addition, Chapter 9, "Unavoidable Adverse Environmental Impacts," includes summary information on certain CEQA requirements discussed in this chapter.

Each environmental resource section of this chapter includes potential mitigation strategies that would be further refined during project-level design and analysis for sections of the HST system. Specific design features are outlined that will be applied during the implementation of the HST system to avoid, minimize, or mitigate potential impacts.

The Authority has focused on avoiding and minimizing potential impacts through rigorous planning and thoughtful design. The Authority has minimized overall impact potential by defining alignments to stay within existing public and railroad rights-of-way to the extent feasible, while still accommodating the appropriate features and design standards for the alternatives. The program level of environmental analysis provides a means to avoid and minimize adverse environmental impacts in the review and refinement of HST Alignment Alternatives and station location options, and identifies mitigation strategies for further consideration in project-level documents. The potential impacts associated with the implementation of the proposed HST system, many of which will be highly site specific, would be further addressed during subsequent project-level environmental review. During project-level review more precise information will be available regarding the location and design of proposed facilities. Using the level of design and engineering detail to be provided during project-level analyses, the Authority will implement approved mitigation strategies; further investigate ways to avoid, minimize, and mitigate potential impacts; and identify site-specific mitigation for sections of the HST system.

3.0.1 Purpose and Content of This Chapter

The purpose of this chapter is to describe existing environmental conditions in the areas that would be affected by the proposed HST Alignment Alternatives and the No Project Alternative, evaluate potential environmental impacts associated with constructing and operating the HST Alignment Alternatives, and present potential program-level mitigation strategies to avoid or reduce those impacts. The analysis presented in this chapter addresses the general effects of a program of actions that would make up the proposed HST system in the Bay Area to Central Valley study region. This chapter describes the general differences in potential environmental consequences between the No Project Alternative and the HST Alignment Alternatives identified in Chapter 2. The analysis also identifies key differences among the potential impacts associated with the various HST Alignment Alternatives and station location options, to support the selection of preferred alignments and station location options in the Bay Area to Central Valley study region.

Chapter 7, "High-Speed Train Network and Alignment Alternatives Comparisons," summarizes and compares the physical and operational characteristics and potential environmental consequences associated with the various HST Alignment Alternatives and describes the differences among the HST

Network Alternatives. A preferred HST Network Alternative and preferred alignment was identified following public and agency comment on the draft Program EIR/EIS and is defined in Chapter 8.

Many sources were used in the preparation of this document. References to these sources are cited in text and in Chapter 14.

3.0.2 Organization of This Chapter

This chapter is organized into sections by resource topic. The resource topics are grouped as follows.

- Transportation and related topics-air quality, noise and vibration, energy, and electromagnetic interference.
- Human environment-land use and community impacts, parklands, farmlands and agriculture, aesthetics and visual resources, socioeconomics, utilities and public services, and hazardous materials/wastes.
- Cultural resources (archaeological resources, historic properties) and paleontological resources.
- Natural environment-geology and seismic hazards, hydrology and water resources, and biological resources, including wetlands.
- Section 4(f) and 6(f) resources (certain types of publicly owned parklands, recreation areas, wildlife/waterfowl refuges, and historic sites).

Each resource topic section contains the following information.

- Regulatory requirements and methods of evaluation.
- Affected environment.
- Environmental consequences.
- Role of design practices in avoiding and minimizing effects. Mitigation strategies and CEQA significance conclusions.
- Subsequent analysis.

The methods of evaluation and regulatory requirements discussions for each resource topic describe the assumptions, approach for evaluation, and criteria used to identify potential impacts as significant (potentially requiring mitigation) and identify the relevant statutes and CEQA, NEPA, or regulatory agency guidelines relevant to future project approvals or decisions for that resource topic. The methods of impact evaluation were developed with input from state and federal resource agencies. The agencies acknowledge that this is a planning-level EIR/EIS aimed at making broad decisions to help determine the corridors and alignments to carry forward for project-level environmental evaluation. Key differences in potential impacts of each of the alignment alternatives are described.

As described in Chapter 2, “Alternatives,” ridership for this system was estimated to vary between 90 million and 117 million passengers (32 million riders would be long-distance commuters) for 2030. For this Program EIR/EIS, the higher ridership forecast of 117 million intercity trips, including 32 million long-distance commute trips, provides a reasonable representation of total capacity and serves as a representative worst-case scenario for analyzing the potential environmental impacts from the physical and operational aspects of the alternatives in 2030. This higher forecast is generally used as a basis for defining the alternatives and is referred to hereafter as the representative demand. In some specific analyses (e.g., energy, air quality, transportation), high-end forecasts would result in potential benefits.

In those cases, additional analysis is included to address the impacts associated with lower ridership forecasts.

The affected environment discussions summarize the information that provides the basis for analysis of potential environmental impacts on each environmental resource. Information in the affected environment discussions is presented for each of the six identified corridors in the study region. The six corridors are San Francisco to San J:Jse, Oakland to San J:Jse, San Jose to Central Valley, East Bay to Central Valley, San Francisco Bay Crossings, and Central Valley. Because the proposed HST system would not be operational until the year 2020, the affected environment discussions describe both the existing conditions as of 2006 and, where appropriate and not overly speculative, the anticipated 2030 conditions that would pertain when the project becomes operational. For disciplines where projections of future changes in existing conditions would be overly speculative, the existing 2006 conditions were used as a proxy for the 2030 conditions. For some disciplines-such as transportation, energy, air quality, and land use-future conditions are routinely projected in adopted regional or local planning documents or are forecast by public agencies. In these cases, the existing conditions and the projected 2030 conditions were used as the basis for impact analysis. The technical studies addressing each resource topic provided key information for the preparation of the affected environment discussions.

The environmental consequences discussions describe the potential environmental impacts (both adverse and beneficial) of the HST Alignment Alternatives in comparison to the No Project Alternative. Each discussion begins by comparing existing conditions with 2030 No Project conditions to describe the consequences of the No Project Alternative and how environmental conditions are expected to change during the timeframe required to bring the proposed HST system online. Po described above, existing (2006) conditions were used as a proxy for 2030 No Project conditions where 2030 baseline information was unavailable, could not be projected, or would be overly speculative. Using 2030 No Project conditions as a basis for comparison, the analysis of impacts then addresses direct and indirect impacts for the proposed HST Alignment Alternatives, as well as potential cumulative impacts. Measures that already have been included as part of the proposed HST Alignment Alternatives to reduce or avoid potential environmental impacts were incorporated into this analysis; examples include locating the alignment within an existing transportation corridor and tunneling to avoid surface disruption in sensitive areas, such as parklands and wildlife habitat areas. The impact analyses compare logical segments of the alignment alternatives and station location options with one another.

For many of the environmental resources, broad study areas were defined to describe a wide context of the existing resources in proximity to proposed improvements. For example, the study area for floodplains extends 100 ft (30.5 meters [m]) on either side of the centerline of the alignment considered. However, the right-of-way necessary for the improvements considered is much smaller (e.g., only 25 ft [7.6 m] on either side of centerline for HST). Potential HST alignment floodplain impacts are described for the 50 ft (25 m) in total width typically needed for the track structures.

Potential impacts on public services, such as traffic and circulation and utilities, are also addressed in Chapter 3. However, specific issues will be addressed only during subsequent project-level environmental review, when more precise information will be available regarding location and design of the facilities proposed (e.g., elevated, at-grade, access locations, station design features, and fencing type and location). The detail of engineering associated with the project-level environmental analysis will allow the Authority to identify system requirements and further investigate ways to avoid, minimize, and mitigate potential effects on the provision of such services.

A. RELATIONSHIP OF THIS CHAPTER TO OTHER CHAPTERS

- The impacts of the HST system were analyzed using a multistep process and are presented accordingly in several chapters.
- This chapter presents the potential impacts of HST Alignment Alternatives, which are the building blocks for creating representative network alternatives.
- Chapter 7, “High-Speed Train Network and Alignment Alternatives Comparisons,” compares the total estimated impacts for the 21 HST Network Alternatives, which represent different ways to

implement the HST system in the study region using combinations of HST Alignment Alternatives and station location options.

- Chapter 5 presents the potential growth effects of the HST system, and Chapter 9 presents the potential unavoidable adverse impacts.

For more information on the relationship between HST Alignment Alternatives and Network Alternatives and for definitions of specific terms, such as study region and station location option, see Chapter 2, "Alternatives."

B. DESIGN FEATURES/PRACTICES AND MITIGATION STRATEGIES

As currently planned, the proposed HST system would avoid and minimize potential negative environmental consequences. Conceptual designs of the HST system meet the project objectives (Chapter 1, "Purpose and Need and Objectives") and design criteria (California High Speed Rail Authority 2004), which set specific goals to avoid and minimize negative environmental consequences. In addition, design and construction practices have been identified that would be employed as the project is developed further in project-level environmental review, final design, and construction stages. Although many of these practices are explicitly included in the project description and included in the capital cost estimates for the project, their application to avoidance and minimization of p:ltential impacts may not be readily apparent. Thus, for each environmental resource topic (section of Chapter 3), applicable design and construction practices and resulting features related to the potential impacts identified in that section are discussed.

The mitigation strategy discussions describe potential approaches that can be identified at a program level for use to avoid, minimize, or reduce potentially significant environmental impacts.

Finally, each resource topic section includes a subsequent analysis discussion summarizing directions for more detailed study during project-level environmental review and documentation.